

# Notice of Allowability

Application No.

10/630,984

Examiner

Timothy J. Henn

Applicant(s)

KAKUMOTO ET AL.

Art Unit

2622

## -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 4/3/07.
2. ☒ The allowed claim(s) is/are 8, 3-5, 9-21 and 25-28 renumbered in that order.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☒ All b) ☐ Some\* c) ☐ None of the:
    1. ☒ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
  5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
    - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
    - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

### Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08),  
Paper No./Mail Date \_\_\_\_\_
4. ☐ Examiner's Comment Regarding Requirement for Deposit  
of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413),  
Paper No./Mail Date \_\_\_\_\_
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_



VIVEK SRIVASTAVA

## **DETAILED ACTION**

### ***Drawings***

1. The drawings were received on 03 April 2007. These drawings are acceptable.

### ***Allowable Subject Matter***

2. Claims 3-5, 8-21 and 25-28 are allowed.
3. The following is an examiner's statement of reasons for allowance: Regarding claims 2-5 and 8-21 the prior art does not teach or fairly suggest a solid-state imaging device having at least one pixel, the pixel comprising: a photoelectric conversion section including a photoelectric conversion circuit and an integrating circuit for outputting a voltage obtained by accumulating electric charge from the photoelectric conversion circuit as an electric signal; and a sample and hold circuit for sampling and holding the electric signal from the photoelectric conversion section and outputting the sampled and held electric signals as an image signal wherein a reset voltage for resetting the sample and hold circuit obtains at least two different values. While solid-state imaging devices having at least one pixel including a photoelectric conversion section and a sample and hold circuit are known (e.g. Figure 22; Nakamura et al., JP 11-313257; Nakamura et al., US 6,836,291; Takada et al., EP 1187217), the prior art does not teach resetting a sample and hold circuit of the pixel using at least two different values as a reset voltage. Furthermore, while the prior art teaches resetting photodiodes using different reset voltages (Mabuchi, EP 1178674; Mann et al.; US 7,064,313), these references are limited to resetting the photodiode and do not teach resetting a sample and hold circuit

of a pixel wherein the sample and hold circuit receives an electric signal from a photoelectric conversion section including a photoelectric conversion circuit and an integrating circuit as claimed.

Regarding claims 25-28, the prior art does not teach or fairly suggest a solid-state imaging device having at least one pixel, the pixel comprising a photoelectric conversion section; a sample hold circuit; and a FET switch through which a reset voltage is applied to the sample hold circuit when the FET switch is turned on, and the reset voltage for resetting the sample hold circuit includes at least two different voltages including a first value and a second value, wherein the first value is set so as to be suitable for resetting the sample hold circuit while the second value is set so as to suppress a leakage of electric charge from the sample hold circuit through the FET switch. While resetting a pixel using first and second voltages is known (e.g. Maubachi, EP 1178674), the prior art does not teach the use of first and second voltages for resetting a sample hold circuit and suppressing a leakage current through a FET switch as claimed.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

### ***Conclusion***

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

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|-----|-----------------|--------------|
| i.  | Hagihara et al. | US 7,030,921 |
| ii. | Kakumoto        | US 6,812,448 |

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Timothy J. Henn whose telephone number is (571) 272-7310. The examiner can normally be reached on M-F 11-7.

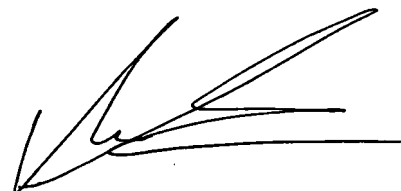
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivek Srivastava can be reached on (571) 272-7304. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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TJH  
6/22/2007

A handwritten signature in black ink, consisting of stylized, overlapping loops and strokes, positioned above the printed name and title.

VIVEK SRIVASTAVA  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2600